

# Priority Advisor at AISSM Full-Time Faculty List & Introduction



關鍵材料  
KMAT



周明奇 講座教授

Chair Prof. Mitch Ming-Chi Chou

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## 研究領域 Research Areas

- 晶體生長 Crystal growth
- 次世代半導體材料(SiC, Ga<sub>2</sub>O<sub>3</sub>) Next-generation semiconductor(SiC, Ga<sub>2</sub>O<sub>3</sub>)
- 光電材料 Electro-optic materials

## 獲獎紀錄 Awards

- The Award for Outstanding Contribution in Science and Technology, Executive Yuan, 2014
- The Outstanding Research Award, Ministry of Science and Technology, 2011 & 2014

## 研究計畫 Research Projects

2006-2018 Visiting Scholar to German institutes, including:

- Max Planck Institute for Solid State Research (MPI), Stuttgart
- Karlsruhe Institute of Technology (KIT), Karlsruhe, Baden-Württemberg
- Institute of Crystal Growth (IKZ), Berlin
- Paul Drude Institute for Solid State Electronics (PDI), Berlin

2021 - 2022 Visiting Scholar, Institute of Solid State Physics, Riga, Latvia

2019 - present Jointly Appointed Research Fellow, Institute of Physics, Academia Sinica, Taiwan

2008 - 2015 Technical Consultant, Korea Atomic Research Institute, Korea

2004 - present **Total NSTC project funding > 200 million NTD**

## 學術企業合作 Academia-industry Collaboration

- **Over 200 million NTD in Technology transfer funding & projects from industry.**
- Collaborated companies: Largan Precision CO., LTD./ Taiwan Applied Crystal CO. LTD.
- Continuous collaboration with the LED, semiconductor, chemical engineering, electronics, and photonics industries and equipment vendors.

關鍵材料  
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李亞儒 教授

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## 研究領域 Research Areas

- 半導體光電元件 Semiconductor Optoelectronic Devices
- 仿生神經元件與計算 Neuromorphic Computing
- 凝態物理 Condensed Matter Physics

## 研究計畫 Research Projects

- 鈣鈦礦量子點結合塔米電漿子於免彩濾光片影像感測與光學突觸臉部識別之應用(一般研究計畫) Application of Perovskite Quantum Dots Combined with Tamm Plasmons in Color-Filter-Free Image Sensing and Optical Synapse-Based Facial Recognition
- 室溫鈣鈦礦量子點極化子凝聚態於全光式電晶體之研究與應用(優秀年輕學者計畫) Study and Application of Room-Temperature Perovskite Quantum Dot Polariton Condensates in All-Optical Transistors
- 全無機鈣鈦礦量子點於仿生視神經突觸元件之開發研究(一般導向專案研究計畫) Development of All-Inorganic Perovskite Quantum Dots for Bio-Inspired Visual Synaptic Devices

## 合作企業 Corporate Collaborators

- 台積電前瞻研究(TSMC ARP) TSMC Advanced Research Project

半導體封測

PSPT



謝昱銘 助理教授

Asst. Prof. Yu-Ming Hsieh

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## 研究領域 Research Areas

- 預測保養 Predictive Maintenance
- 良率管理 Yield Management
- 虛擬量測 Virtual Metrology
- 半導體產業智慧製造應用 Smart Manufacturing Applications in Semiconductor Industry
- 生成式 AI Generative AI

## 研究計畫 Research Projects

- 研發基於卷積神經網路之批次反應溫度調整架構 Development of a Batch Reaction Temperature Adjustment Framework Based on Convolutional Neural Networks
- 工業4.2電子產業供應鏈創新智能、低碳技術研發(1/3)- Industry 4.2: R&D of Innovative, Intelligent, and Low-Carbon Technologies for the Electronics Industry Supply Chain (1/3)

## 合作企業 Corporate Collaborators

- 日月光 ASE Technology Holding Co., Ltd
- 申豐特用應材股份有限公司 Shin Foong Specialty & Applied Materials Co., Ltd.
- 緯創資通 Wistron Corporation
- 均豪精密工業 Gallant Precision Machining Co., Ltd.
- 台塑新智能 Formosa Smart Energy



水野潤 教授

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## 研究領域 Research Areas

- 元件科學 Device Science
- 微機電之奈微元件開發 Micro-Components for MEMS
- 表面科學 Surface Science
- 數值模擬 Numerical simulation
- 可撓式元件開發 Flexible Components Development
- 電子構裝 Electronic Packaging
- 先端醫療元件 Advanced Medical Components

## 研究計畫 Research Projects

- Evaluation of VUV surface treatment technology
- Regulation of Osseointegration Using Precise and Regulated Nanostructured Titanium
- Research on Microfluidics for extremely high-power density PKGS
- Fabrication of Artificial Intervertebral Discs that Match the Stiffness of the Human Body Simulator
- RF Device Fundamental Research and Development
- Glass Interposer Research and Development
- 3D-AXIS Application Development for Advanced Semiconductors
- New design in the interlayer in TGV for reducing residual stress
- Development of Resin-Based Hybrid Bonding for Stacked Semi. Chips
- Evaluation of surface treatment for TGV substrates

## 合作企業 Corporate Collaborators

### Foreign Company :

ASML, Bosch, Toray, Toray Engineering, AGC, OMRON, Lintec, Okuno Chemical Industry, Nissan Chemical, Adachi Electronic, Creative coatings, Canon, Parker

### Domestic Company and Institute :

ASE, Innolux, Either Tech, TSRI, ITRI



歐庭嘉 助理教授

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## 研究領域 Research Areas

- 綠色能源科技 Green Energy
- 新型智慧能源管理系統 Smart Energy Management Systems
- 微電網/智慧電網/智慧型虛擬電廠 Microgrids / Smart Grids / Virtual Power Plants
- 碳中和/CCUS/負碳排技術 Carbon Neutrality / CCUS / Negative Emission Technologies
- 太陽光電/風光互補/儲能系統之系衝分析 PV/Wind-Storage Hybrid System Analysis
- AI辨識與最佳化(太陽能模組、微藻、碳權) AI Recognition and Optimization (Solar, Microalgae, Carbon Credit)
- 波浪發電 Wave Energy
- 軌道機電/號誌系統 Railway Electromechanical/Signal Systems
- 淨零科技導入ESG ESG-Based Net-Zero Technology
- 淨零建築 Net-Zero Energy Building
- 氫能與燃料電池 Hydrogen Energy and Fuel Cells
- 電動車 Electric Vehicles
- 波浪能與風能整合系統 Wave-Wind Hybrid Energy Systems

## 研究計畫 Research Projects

- Intelligent Energy-Saving and Carbon-Reducing Adjustment System with a Set of Carbon-Fixation Biological Negative-Emissions Devices for Microalgae Cultivation (ESCRA)
- Integrating intelligent automated renewable energy prediction technology into the application of microgrids
- Impact Analysis of Cogeneration System Interconnection
- Impact Study of Integrated Wind and Solar PV Systems on 161kV Grid
- Development of AI Recognition System for Solar PV

## 合作企業 Corporate Collaborators

- Influence Technology Co., Ltd.
- Jin Cheng Electrical Engineers Office
- Rock Solid Energy Co., Ltd.
- Asahi Energy Co., Ltd.
- Taiwan Energy Technology Engineering Co., Ltd.

半導體製程

PSMT



鄭樵陽 副教授

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To be established

## 研究領域 Research Areas

- 碳化矽元件關鍵製程研究與開發 Research of Key SiC Device Processes for power application
- 碳化矽晶圓製作與磊晶成長 SiC wafering process and Epitaxial growth
- 寬能隙半導體元件製作開發 Development of Wide-Bandgap Power Device Fabrication
- 絕緣覆矽基板製作技術開發與應用 Development and Application of Silicon-on-Insulator (SOI) Substrate Fabrication Technology
- 超快雷射於半導體製程之開發與應用 Development and Application of Ultrafast Laser in Semiconductor Processes

## 研究計畫 Research Projects

- 碳化矽晶圓表面改質技術開發計畫 SiC Wafer Surface Modification Technology Development Project
- 碳化矽晶圓製造智慧化升級計畫 SiC Wafer Smart Manufacturing Upgrade Project
- 碳化矽晶圓表面改質技術開發計畫 SiC Wafer Surface Modification Technology Development Project
- 雷射智慧化銲接設備建置計畫 Laser Intelligentized Welding Equipment Establishment Project
- A+企業創新研發淬鍊計畫-物聯網產業使用半導體元件尖端矽基材技術開發 (SOI基板應用開發) A+ Enterprise Innovation and R&D Enhancement Project - Advanced Silicon-Based Material Technology Development for IoT Industry Semiconductor Devices (SOI Substrate Application Development)

## 合作企業 Corporate Collaborators

- 格棋化合物半導體-GaN HEMT應用基板開發 (MOU) GeChi Compound Semiconductor Co., Ltd.
- 正鉑雷射科技股份有限公司 JUMBO LASER CO.,LTD.

半導體製程

PSMT



**Shyamal K. Saha**

Professor

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\*Required to co-advise with one or more faculty members.

## 研究領域 Research Areas

- 二維材料 Two-Dimensional Materials (Graphene, MoS<sub>2</sub>, MXene, Graphitic Carbon Nitride)
- 能源儲存材料與元件 Energy Storage Materials & Devices
- MoS<sub>2</sub> 薄膜電晶體與光偵測器 MoS<sub>2</sub> based TFT and Photodetectors
- 記憶(自旋電子)元件 Memory (Spintronic) Devices

## 研究計畫 Research Projects

- 2D Materials based energy storage devices
- MoS<sub>2</sub> based Thin film transistor and photodetector

## 近期發表論文 Recent Publications

- Sulfur-tuned MoS<sub>2</sub> quantum dot decorated Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub> (MXene) electrode materials for high performance supercapacitor applications; *Journal of alloys and Compounds*, 985 (2024) 174010
- Facile in-situ growth of spore-like silica on layered MXene sheets for extraordinary Supercapacitor Applications" ; *Electrochimica Acta* [465](#), 142983 (2023)
- Photoluminescence and photo-induced conductivity in 2D siloxene nanosheet for optoelectronic applications; S. Mondal, T. K. Mondal, Y. K. Su, and S. K. Saha, *J. Colloid Interface Sci.*, 562, 453-460 (2020)